REMARKS/ARGUMENTS

By this amendment, claim 33 has been amended to depend from claim 29 rather than claim 32, which was cancelled in an earlier amendment. No claims have been cancelled and no new claims have been added to the application. Accordingly, claims 1-3, 5-7, 11-16, 18-21, 24-31, 33-36 and 39-45 are pending in the application. No new matter has been added.

In the prior Office Action, the Examiner rejected claims 1-3, 5-7, 11-16, 18-21, 25-31, 33-36 and 40-45 under 35 U.S.C. §103(a) as being unpatentable over Lob et al., U.S. Pat, 5,304,789, in view of Swiler, U.S. Pat. 6,485,557. The Examiner contends that Lob et al. discloses a method of forming an infrared detectable mark on a substrate that includes the steps of: (1) forming the mark on the substrate using a laser marking system and a laser marking composition comprising an infrared reflective inorganic pigment (carbon black); and (2) applying a cover coating (dyed black layer) comprising an inorganic pigment that is different than the infrared reflective inorganic pigment in the laser marking composition over the mark and over at least a portion of the substrate adjacent to the mark to form a cover coat (underlined emphasis added). The Examiner contends that Lob et al. fails to disclose that the cover coat is in the form of a film selected from the group consisting of paint films, porcelain enamel coating films, glass enamel coating films, extruded plastic films and laminated plastic films. However, the Examiner contends that it would have been obvious to one of ordinary skill in the art to modify the black layer film of Lob et al. to comprise a film selected from the group consisting of paint films, porcelain enamel coating films, glass enamel coating films, extruded plastic films and laminated plastic films in view of Swiler, which discloses infrared reflective inorganic pigments as colorants for various coatings. For the reasons indicated below, applicant respectfully submits that the Examiner has misapprehended the teachings of Lob et al., and that the Examiner's combination of Lob et al. and Swiler simply does not produce a *prima facie* case of obviousness as to any claims pending in the application. Reconsideration is therefore respectfully requested.

Lob et al. discloses a multilayer card-shaped data carrier that includes a layer that appears black in the visible portion of the electromagnetic spectrum, but which is

transparent or permeable to electromagnetic radiation in the infrared portion of the electromagnetic spectrum. The data carrier according to Lob et al. and includes markings that are detectable in the infrared portion of the electromagnetic spectrum but which are camouflaged by the black layer in the visible portion of the electromagnetic spectrum. Fig. 1 of Lob et al., which is reproduced below (red terms added), shows a cross-sectional view through such a card-shaped data carrier:

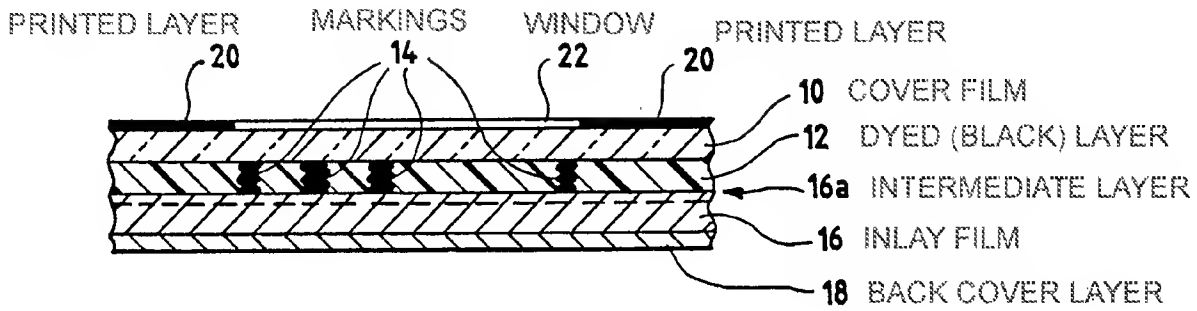

FIG. 1

Lob et al. teaches that cover film (10) is transparent or permeable to light in the visible portion of the electromagnetic spectrum (see col. 4, lines 56-59). The cover film (10) is also transparent to a laser pencil working in the IR spectrum (see col. 4, lines 59-61).

Below the cover film (10) is a layer (12), which is "dyed" black with an infrared-spectrum transparent or permeable "ink" (see col. 4, lines 61-63). The composition of the black "dye" or "ink" is not provided, however one having ordinary skill in the art would recognize the use of such terms as defining organic colorants as opposed to inorganic pigments. Lob et al. teach that the dyed (black) layer (12) is sensitized to the energy of an IR laser by the addition of carbon black (see col. 4, lines 66-67). Contrary to the Examiner's assertions, carbon black is not an infrared reflective material. But rather, it is a material that readily absorbs infrared radiation. In fact, Lob et al. use this well-known property of carbon black for the express purpose of absorbing radiation from an IR laser, which thereby causes thermal decomposition and blackening of the layer

(12) within the focus of the IR laser to form data markings (14) in the layer (see col. 4, line 67, to col. 5, line 4). The data markings (14) in layer (12) are not discernable to the naked eye through the cover film (10) because layer (12) is dyed to a blackness matching that of the data markings (14) (see col. 5, lines 4-7).

Lob et al. teach that a white inlay film (16) can be provided below the layer (12), if desired (see col. 5, lines 11-13). And Lob et al. further teach that a back cover layer (18) can be applied to cover the back of the data card (see col. 5, lines 13-15). In an alternative embodiment, a portion of layer (16) can be sensitized to IR laser radiation (presumably by incorporating carbon black, although this is not expressly stated by Lob et al.) in an intermediate layer (16a), in which case layer (12) must remain permeable to IR radiation (i.e., contain no carbon black) (see col. 5, lines 32-37).

The data carrier according to Lob et al. is specifically constructed so that one can form data markings (14) in the completed structure using an IR laser without the need for applying subsequent layers by lamination. This is the problem solved by Lob et al. (see col. 1, line 28, to col. 2, line 31). In contrast to that which is claimed in claim 1, the data markings (14) are not formed on a substrate using "a laser marking composition comprising an infrared reflective inorganic pigment." On the contrary, Lob et al. teaches that the data markings (14) are formed by decomposing the sensitized layer (12) or (16a) using an IR laser. The entire sensitized layer (12) or (16a) according to Lob et al. would thus necessarily include carbon black (otherwise, the laser radiation would not be absorbed where the marking was desired). The data marking (14) is thus not discernable from the substrate by virtue of the presence of carbon black. On the contrary, it is discernable because the sensitized layer (12) or (16a) has been decomposed by virtue of the absorption of IR radiation form a laser by carbon black in that area.

Furthermore, in the data carrier according to Lob et al., no cover coating material comprising an inorganic pigment that is different than the infrared reflective inorganic pigment in the laser marking composition is applied over the mark and over at least a portion of the substrate adjacent to the mark to form a cover coat, as required by claim 1. There are no data markings (14) in the data carrier according to Lob et al. until the

completed structure is exposed to IR laser radiation. In other words, the data markings (14) are formed in the completed structure when it is exposed to IR laser radiation. No cover coating material is applied "over the mark" after it is formed according to Lob et al. And thus, Lob et al. clearly does not teach this step of the method claimed in claim 1.

Swiler cannot be combined with Lob et al. to create a *prima facie* case of obviousness insofar as claim 1 is concerned. Swiler teaches manganese vanadium oxide pigments that exhibit improved reflectance in the infrared region of the electromagnetic spectrum. There is nothing in the teachings of Swiler that would lead one to incorporate such pigments in any of the layers of the data carrier according to Lob et al. for any reason. The Examiner reasons that one would put such pigments in the dye (black) layer (12) of Lob et al., but this makes no sense inasmuch as Lob et al. needs absorption of IR radiation from an IR laser in order to form data markings (14) via decomposition. If an IR reflective pigment was incorporated in such a layer, the radiation from the IR laser would be reflected away, and no decomposition would likely occur and thus no data markings (14) would likely be formed. Furthermore, even if one were inspired by Swiler to include such pigments in one of the layers of the data carrier according to Lob et al., the steps of claim 1 would still not be met because claim 1 requires that the cover coating be applied over the mark, and Lob et al. teaches forming the data markings when the data carrier is complete for the purpose of avoiding the need to apply additional layers by lamination (etc.). Accordingly, the rejection of claim 1 under 35 U.S.C. §103(a) as being unpatentable over Lob et al. and Swiler is improper and should be withdrawn. Applicant notes that claims 2, 3, 5-7 and 11-13 depend from claim 1 and are patentable over such references for at least the same reasons.

With respect to claim 14, the Examiner contends that Lob et al. discloses: (1) applying a marking material comprising an infrared reflective inorganic pigment (carbon black) to the substrate to form the mark; (2) applying a contrasting marking material (titanium dioxide in inlay film (16)) proximal to the mark; and (3) applying a cover coating material (dyed (black) layer (12)) comprising an inorganic pigment that is different than the infrared reflective inorganic pigment in the marking material <u>over the mark and contrast mark</u>. As noted above, Lob et al. teaches nothing of the sort.

Carbon black is not an infrared reflective inorganic pigment. Lob et al. use carbon black for the purpose of absorbing infrared radiation from an IR laser, which causes decomposition of the sensitized layer (12) or (16a) containing the carbon black. There is no contrasting marking material applied proximal to the marking material in Lob et al. The titanium dioxide in inlay film (16) makes the inlay film (16) white, except where carbon black is incorporated in the sensitized intermediate layer (16a). And this is true across the entire surface of the layer. No markings are formed until after the IR laser is used to decompose part of sensitized layer (12) or (16a). Finally, there is no cover coating applied over a mark and contrast mark as required by claim 14. Lob et al. teaches formation of the data marking after all layers have been formed for the express purpose of avoiding application of new layers after the mark has been formed. And Swiler cannot be relied upon to overcome these deficiencies. Claim 14 is clearly patentable over Lob et al. and Swiler. Claims 15, 16, 18-21 and 25-28 depend, directly or through an intervening claim, from claim 14 and are thus patentable over Lob et al. and Swiler for at least the same reasons as claim 14. Reconsideration is thus respectfully requested.

With respect to claim 29, the Examiner contends that Lob et al. discloses: (1) applying a marking material comprising an infrared reflective inorganic pigment (carbon black) to the substrate to form the mark; (2) applying a masking material (titanium dioxide in inlay film (16)) over a portion of the mark to form a contrast mask; and (3) applying a cover coating material (dyed (black) layer (12)) comprising an inorganic pigment that is different than the infrared reflective inorganic pigment in the marking material over the mark and the contrast mask. As noted above, Lob et al. teaches nothing of the sort. Carbon black is not an infrared reflective inorganic pigment. Lob et al. use carbon black for the purpose of absorbing infrared radiation from an IR laser, which causes decomposition of the sensitized layer (12) or (16a) containing the carbon black. There is no contrast mask applied over a mark formed by a marking material in Lob et al. The titanium dioxide in inlay film (16) is below the data marking (14) later formed by an IR laser. And, there is no cover coating applied over a mark and contrast mask as required by claim 29. Lob et al. teaches formation of the data marking after all

layers have been formed for the express purpose of avoiding application of new layers after the mark has been formed. And Swiler cannot be relied upon to overcome these deficiencies. Claim 29 is clearly patentable over Lob et al. and Swiler. Claims 30, 31, 33-36 and 40-43 depend, directly or through an intervening claim, from claim 29 and are thus patentable over Lob et al. and Swiler for at least the same reasons as claim 29.

With respect to claim 44, the Examiner contends that Lob et al. discloses a non-visible authentication mark comprising a laser mark disposed between a substrate and a cover coating layer that covers the laser mark and at least a portion of the substrate surrounding the laser mark, wherein the laser mark comprises and infrared reflective inorganic pigment and the cover coating comprises an inorganic pigment that is different than the infrared reflective inorganic pigment in the laser mark. As noted above, this is not correct. Lob et al. teaches the use of carbon black as an infrared absorbing material, which due to the absorption of infrared radiation from an IR laser causes decomposition of a portion of sensitized layer (12) or (16a), which can be discerned in the IR portion of the spectrum from the non-irradiated portion of layer (12) or (16a). The black "dye" or "ink" in sensitized layer (12) is not disclosed as being an inorganic pigment. And there is nothing in Swiler that would motivate one having ordinary skill in the art to incorporate a vanadium manganese oxide pigment in any layer of the data carrier disclosed by Lob et al. Claim 44 is clearly patentable over Lob et al. and Swiler.

With respect to claim 45, the Examiner contends that Lob et al. discloses and article marked with a non-visible authentication mark comprising a laser mark disposed between a substrate and a cover coating layer that covers the laser mark and at least a portion of the substrate surrounding the laser mark, wherein the laser mark comprises and infrared reflective inorganic pigment and the cover coating comprises an inorganic pigment that is different than the infrared reflective inorganic pigment in the laser mark. As noted above, this is not correct. Lob et al. teaches the use of carbon black as an infrared absorbing material, which due to the absorption of infrared radiation from an IR laser causes decomposition of a portion of sensitized layer (12) or (16a), which can be discerned in the IR portion of the spectrum from the non-irradiated portion of layer (12) or (16a). The black "dye" or "ink" in sensitized layer (12) is not disclosed as being an

inorganic pigment. And there is nothing in Swiler that would motivate one having ordinary skill in the art to incorporate a vanadium manganese oxide pigment in any layer of the data carrier disclosed by Lob et al. Claim 45 is clearly patentable over Lob et al. and Swiler.

Finally, the Examiner rejected claims 24 and 39 under 35 U.S.C. §103(a) as being unpatentable over Lob et al. and Swiler as applied to claims 14 and 29, respectively, further in view of Daniel et al., U.S. Pub. App. No. 2001/0005570. The Examiner contends that Lob et al. and Swiler teach the invention as claimed with the exception of the data marking (14) being in the form of a bar code. The Examiner contends that one having ordinary skill in the art would have been motivated to form the data marking (14) in the form of a bar code based on the teachings of Daniel et al.

In response, applicant respectfully submits that Lob et al. and Swiler cannot be combined to read on claims 14 and 29, from which claims 24 and 39 depend. And Daniel et al. cannot be relied upon to cure the deficiencies in the base rejection. Even if one were to incorporate an infrared reflective manganese vanadium oxide inorganic pigment in the data carrier according to Lob et al. for some unexplained reason, and were to use an IR laser to form a data marking in the form of a bar code, the process steps employed would still not meet that which is claimed in claims 24 and 39. There would be no application of a cover coating over a mark. And, there would be no mark formed by a laser marking composition comprising an infrared reflective inorganic pigment. The rejection of claims 24 and 39 is improper and should be withdrawn.

The determination regarding whether an invention as claimed is obvious in view of the prior art must be made in accordance with the standards set forth in the Supreme Court's opinion in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398 , 82 U.S.P.Q.2d 1385 (2007). In the *KSR* case, the Court made it clear that in order to reject a claim under 35 U.S.C. §103, there must be an explicit analysis explaining the apparent reason why a person of ordinary skill in the art would combine known elements described in the prior art in the way claimed. The person of ordinary skill in the art would have to see the benefit of making the combination. The person of ordinary skill in the art would have to recognize that it would improve similar devices or methods in the same way. The

critical inquiry is whether the claimed improvement is more than the predictable use of prior-art elements according to their established functions. If it is, then the improvement is not obvious under 35 U.S.C. §103(a). In the present case, the analysis required by *KSR* requires a finding that applicants' invention, as claimed, is not obvious in view of Lob et al., Swiler and Daniel et al.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0160, our Order No. FER-15400.001.001.

Respectfully submitted,

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